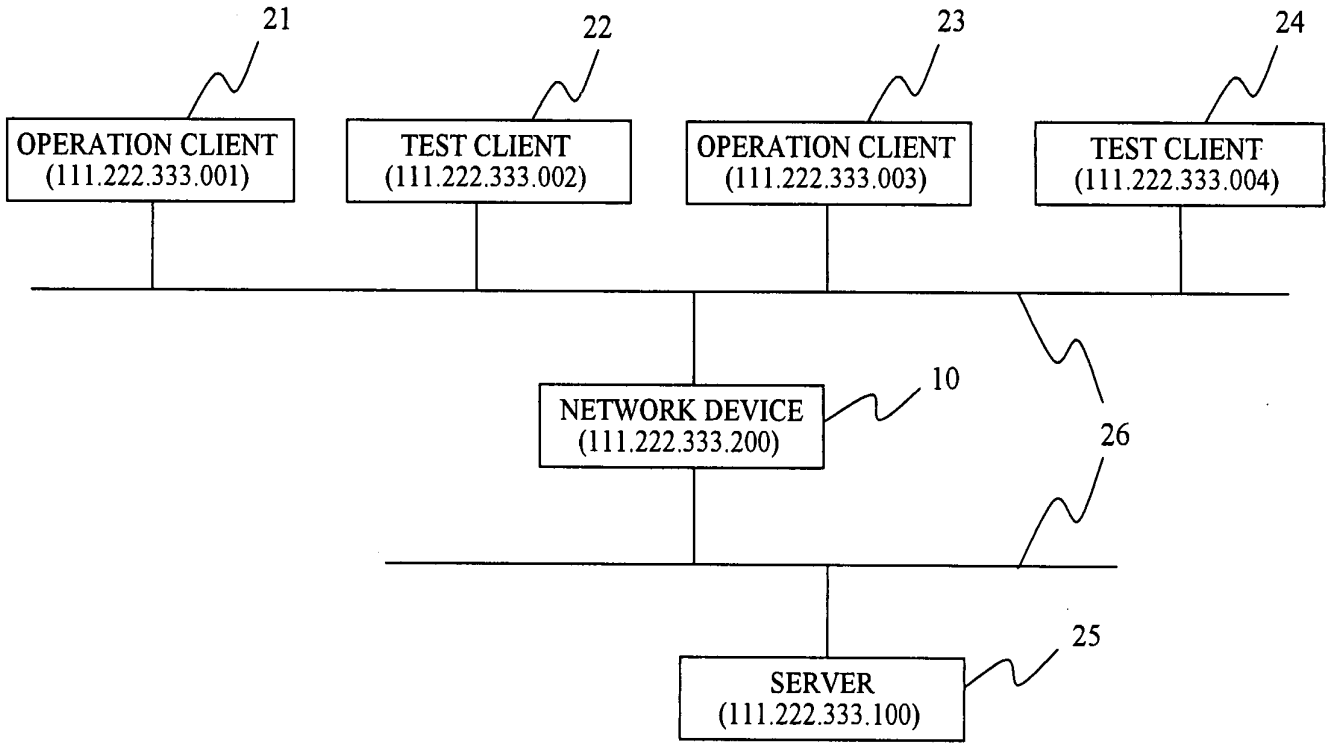
21
22
23
24
OPERATION CLIENT
(111.222.333.001)
TEST CLIENT
(111.222.333.002)
OPERATION CLIENT
(111.222.333.003)
TEST CLIENT
(111.222.333.004)
10
NETWORK DEVICE
(111.222.333.200)
26
25
SERVER
(111.222.333.100)

Fig. 1

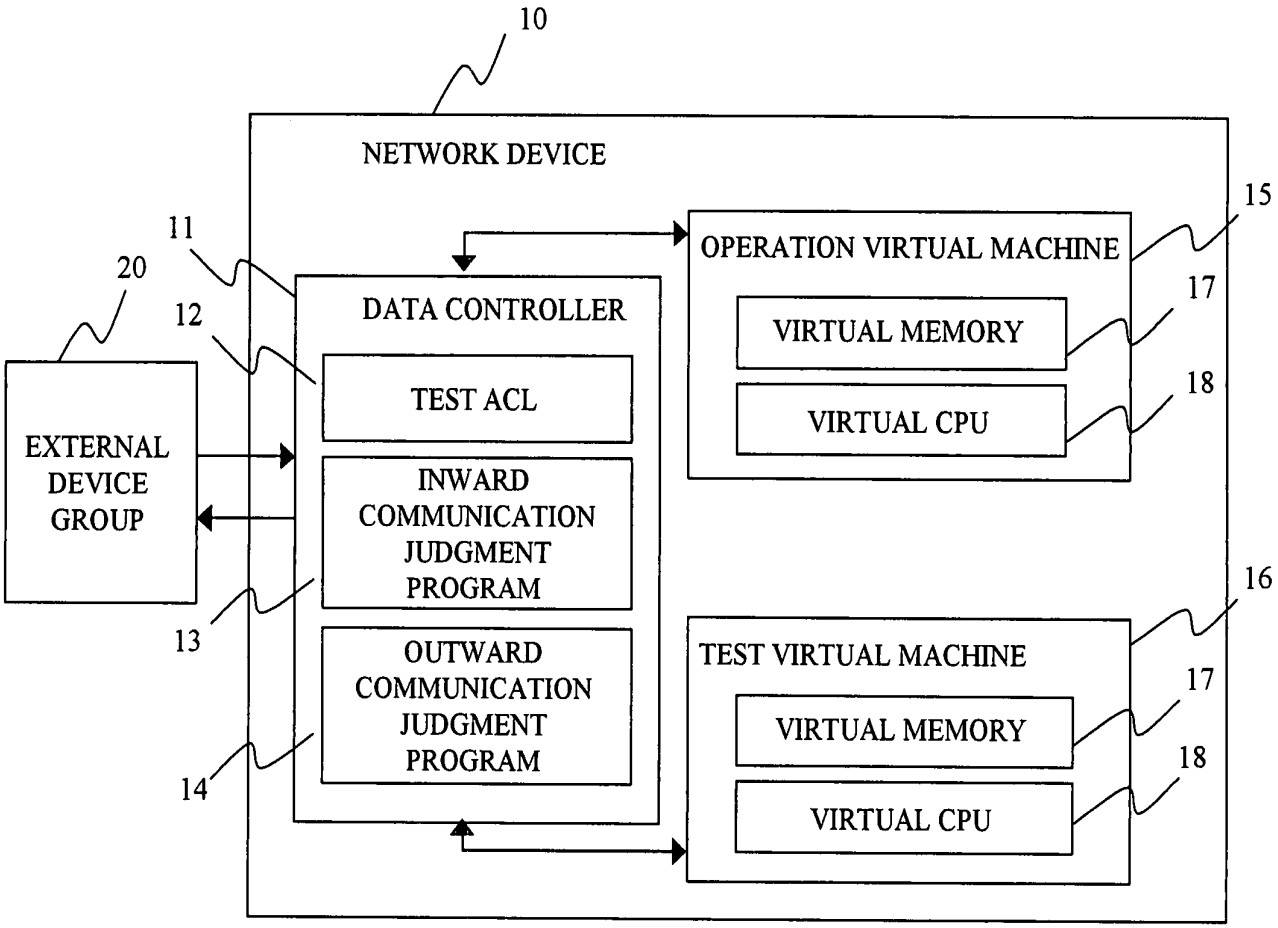
10
NETWORK DEVICE
11
20
12
DATA CONTROLLER
TEST ACL
INWARD COMMUNICATION JUDGMENT PROGRAM
OUTWARD COMMUNICATION JUDGMENT PROGRAM
13
14
EXTERNAL DEVICE GROUP
15
OPERATION VIRTUAL MACHINE
VIRTUAL MEMORY
VIRTUAL CPU
17
18
16
TEST VIRTUAL MACHINE
VIRTUAL MEMORY
VIRTUAL CPU
17
18

Fig. 2

12

35 LINE No.	31 IDENTIFIER	32 VIRTUAL MACHINE	33 COMMUNICATION IDENTIFYING CONDITION	34 ACTION
1	INWARD	OPERATION	TRANSMITTER OR RECEIVER IS TEST CLIENT	REJECT
2	INWARD	TEST	TRANSMITTER OR RECEIVER IS TEST CLIENT	PERMIT
3	OUTWARD	OPERATION	TRANSMITTER OR RECEIVER IS TEST CLIENT	REJECT
4	OUTWARD	TEST	TRANSMITTER OR RECEIVER IS TEST CLIENT	PERMIT
5	BIDIRECTIONAL	OPERATION OR TEST	RECEIVER IS NETWORK DEVICE	PERMIT
6	BIDIRECTIONAL	TEST	ALL	REJECT
7	BIDIRECTIONAL	OPERATION	ALL	PERMIT

Fig. 3

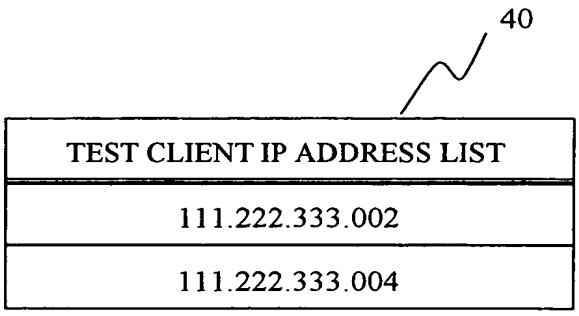

Fig. 4

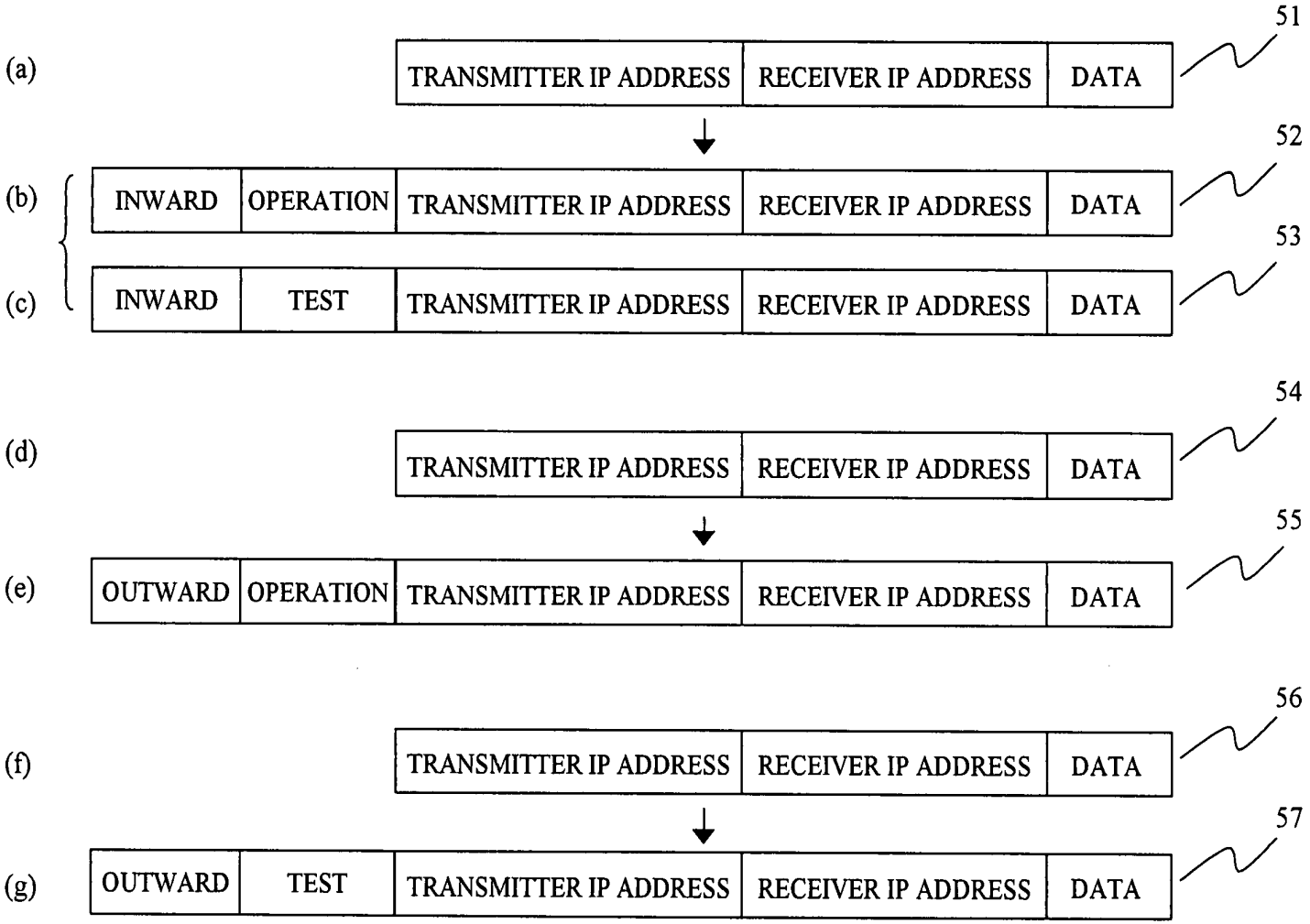
(a)
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
51
(b)
INWARD
OPERATION
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
52
(c)
INWARD
TEST
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
53
(d)
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
54
(e)
OUTWARD
OPERATION
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
55
(f)
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
56
(g)
OUTWARD
TEST
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
57

Fig. 5

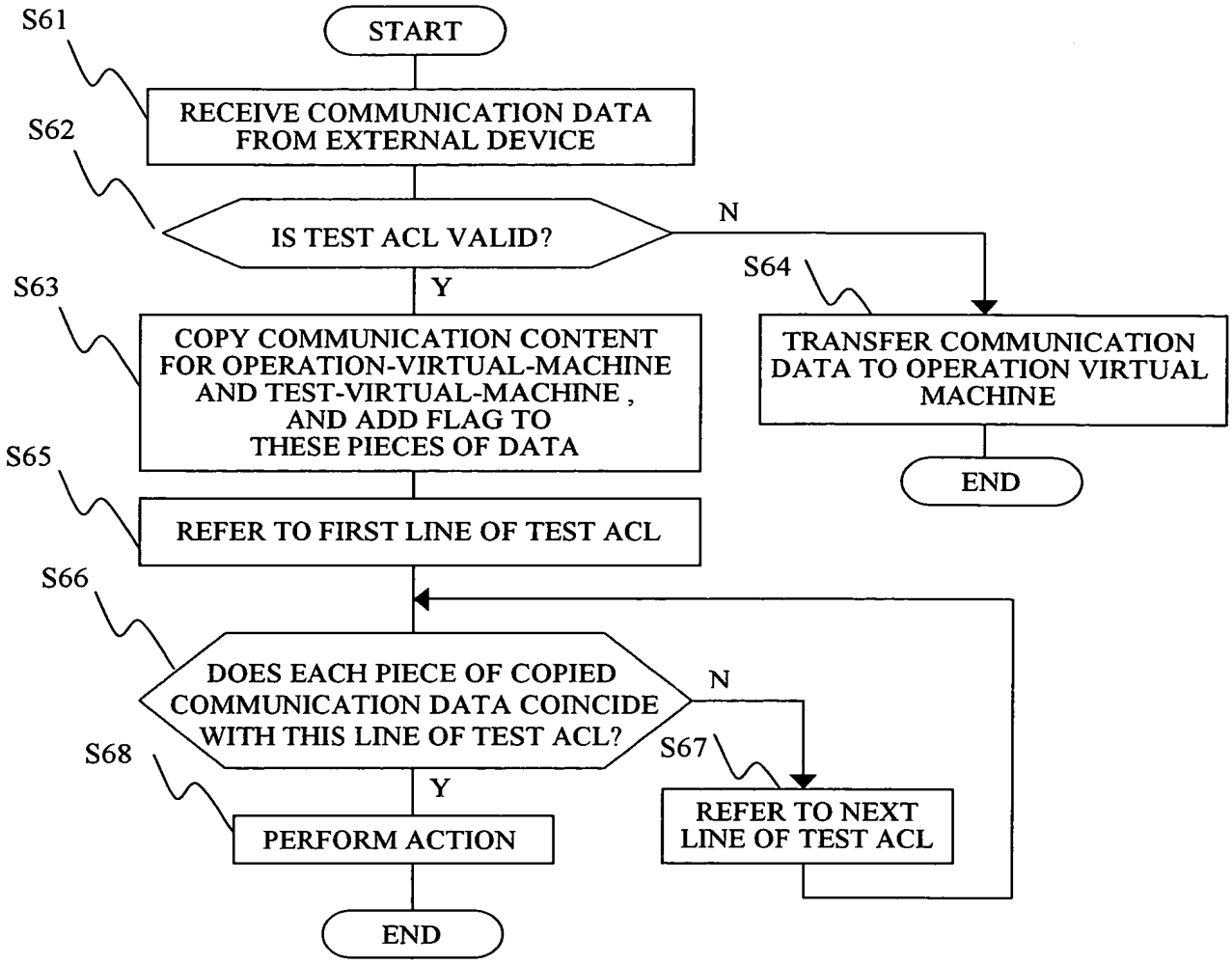
S61
START
RECEIVE COMMUNICATION DATA FROM EXTERNAL DEVICE
S62
IS TEST ACL VALID?
N
Y
S63
COPY COMMUNICATION CONTENT FOR OPERATION-VIRTUAL-MACHINE AND TEST-VIRTUAL-MACHINE , AND ADD FLAG TO THESE PIECES OF DATA
S64
TRANSFER COMMUNICATION DATA TO OPERATION VIRTUAL MACHINE
END
S65
REFER TO FIRST LINE OF TEST ACL
S66
DOES EACH PIECE OF COPIED COMMUNICATION DATA COINCIDE WITH THIS LINE OF TEST ACL?
N
S67
REFER TO NEXT LINE OF TEST ACL
S68
Y
PERFORM ACTION
END

Fig. 6

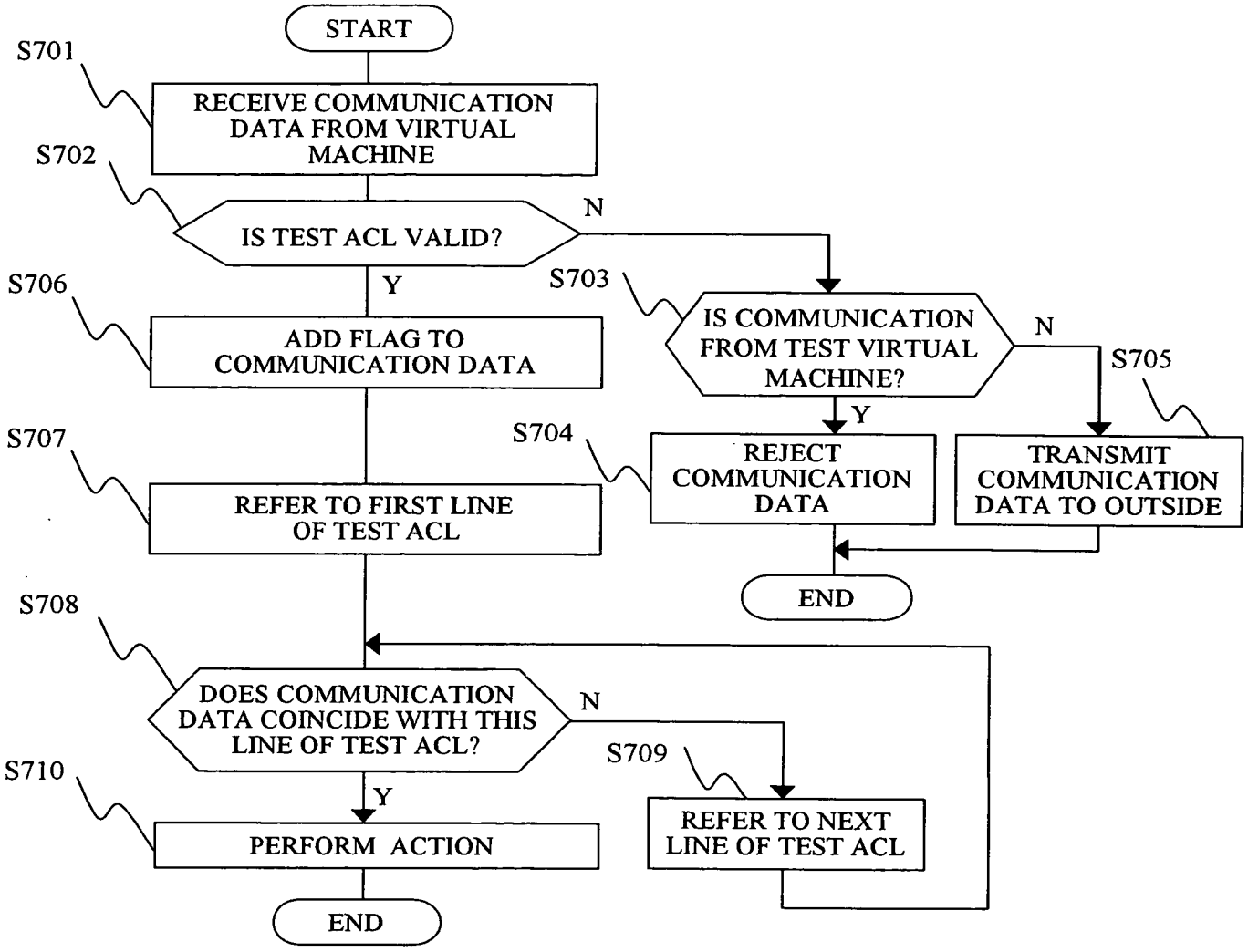
START
S701
RECEIVE COMMUNICATION DATA FROM VIRTUAL MACHINE
S702
IS TEST ACL VALID?
N
Y
S703
IS COMMUNICATION FROM TEST VIRTUAL MACHINE?
N
Y
S705
TRANSMIT COMMUNICATION DATA TO OUTSIDE
S704
REJECT COMMUNICATION DATA
END
S706
ADD FLAG TO COMMUNICATION DATA
S707
REFER TO FIRST LINE OF TEST ACL
S708
DOES COMMUNICATION DATA COINCIDE WITH THIS LINE OF TEST ACL?
N
Y
S709
REFER TO NEXT LINE OF TEST ACL
S710
PERFORM ACTION
END

Fig. 7

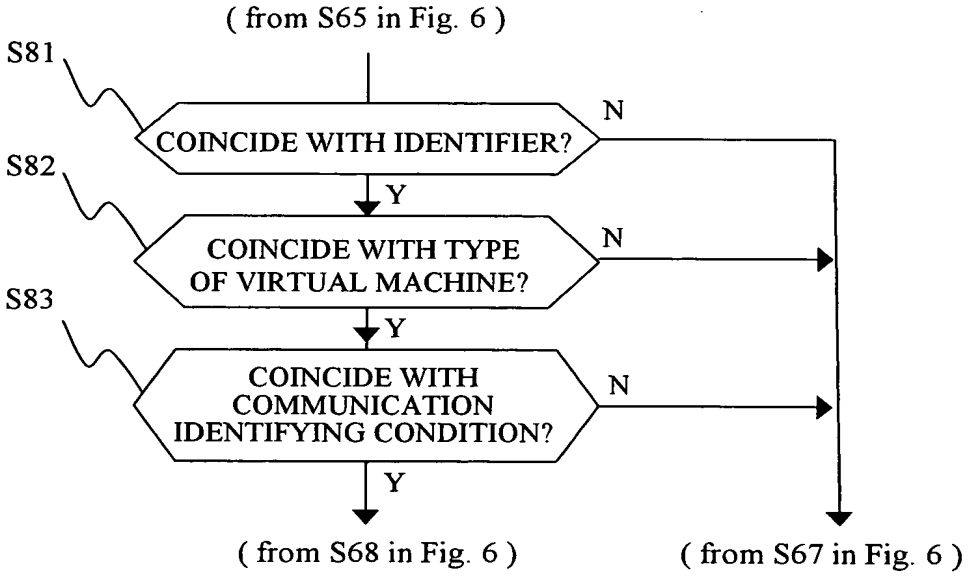
(from S65 in Fig. 6)
S81
COINCIDE WITH IDENTIFIER?
N
S82
Y
COINCIDE WITH TYPE OF VIRTUAL MACHINE?
N
S83
Y
COINCIDE WITH COMMUNICATION IDENTIFYING CONDITION?
N
Y
(from S68 in Fig. 6)
(from S67 in Fig. 6)

Fig. 8

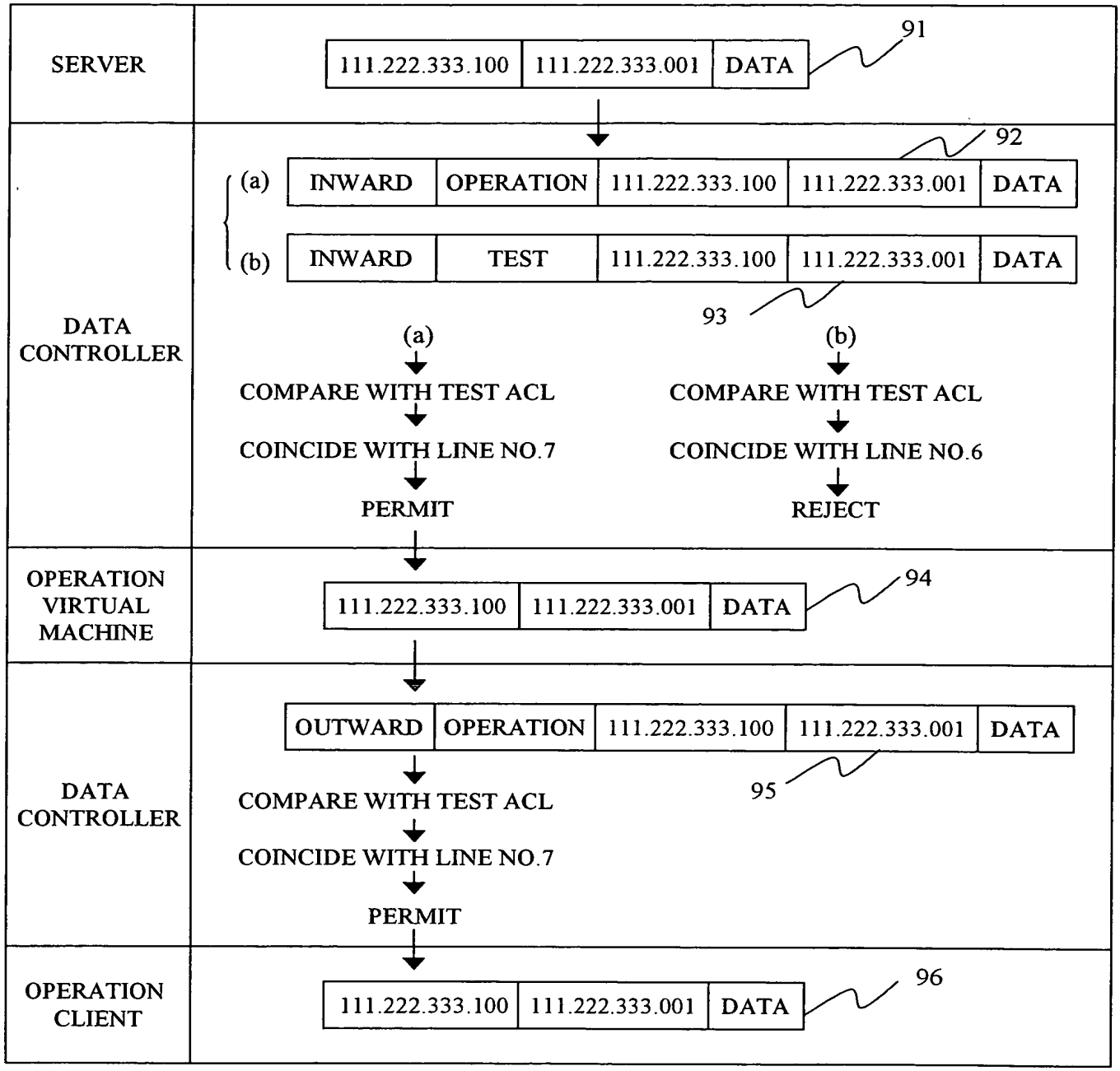
SERVER
111.222.333.100
111.222.333.001
DATA
91
DATA CONTROLLER
92
(a)
INWARD
OPERATION
111.222.333.100
111.222.333.001
DATA
(b)
INWARD
TEST
111.222.333.100
111.222.333.001
DATA
93
(a)
COMPARE WITH TEST ACL
COINCIDE WITH LINE NO.7
PERMIT
(b)
COMPARE WITH TEST ACL
COINCIDE WITH LINE NO.6
REJECT
OPERATION VIRTUAL MACHINE
111.222.333.100
111.222.333.001
DATA
94
DATA CONTROLLER
OUTWARD
OPERATION
111.222.333.100
111.222.333.001
DATA
95
COMPARE WITH TEST ACL
COINCIDE WITH LINE NO.7
PERMIT
OPERATION CLIENT
111.222.333.100
111.222.333.001
DATA
96

Fig. 9

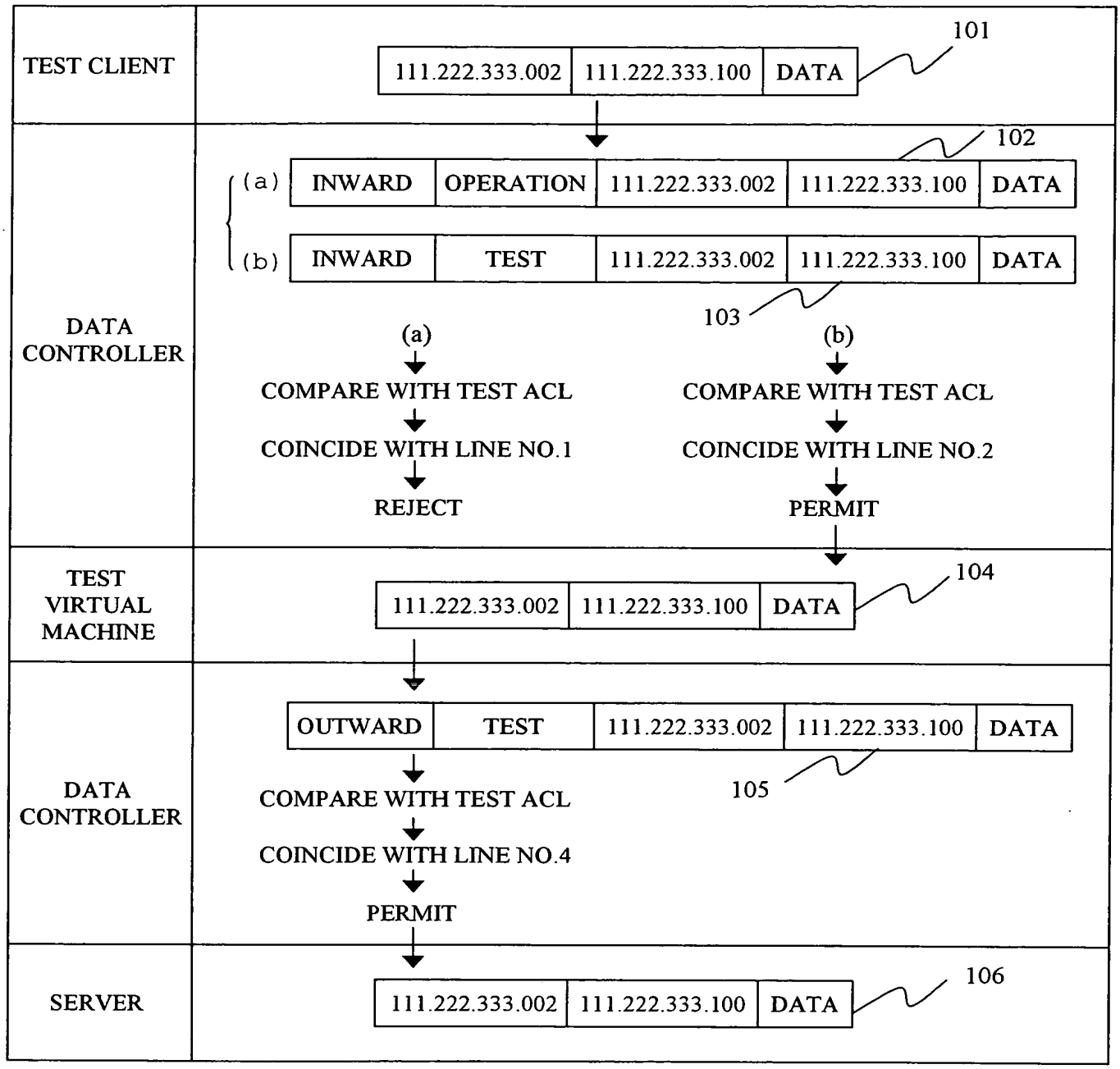
TEST CLIENT
111.222.333.002
111.222.333.100
DATA
101
DATA CONTROLLER
102
(a)
INWARD
OPERATION
111.222.333.002
111.222.333.100
DATA
(b)
INWARD
TEST
111.222.333.002
111.222.333.100
DATA
103
(a)
COMPARE WITH TEST ACL
COINCIDE WITH LINE NO.1
REJECT
(b)
COMPARE WITH TEST ACL
COINCIDE WITH LINE NO.2
PERMIT
TEST VIRTUAL MACHINE
111.222.333.002
111.222.333.100
DATA
104
DATA CONTROLLER
OUTWARD
TEST
111.222.333.002
111.222.333.100
DATA
105
COMPARE WITH TEST ACL
COINCIDE WITH LINE NO.4
PERMIT
SERVER
111.222.333.002
111.222.333.100
DATA
106

Fig. 10

LINE No.	VIRTUAL MACHINE	COMMUNICATION IDENTIFYING CONDITION	ACTION
1	OPERATION	TRANSMITTER OR RECEIVER IS TEST CLIENT	REJECT
2	TEST	TRANSMITTER OR RECEIVER IS TEST CLIENT	PERMIT

110

Fig. 11A

LINE No.	VIRTUAL MACHINE	COMMUNICATION IDENTIFYING CONDITION	ACTION
1	OPERATION	TRANSMITTER OR RECEIVER IS TEST CLIENT	REJECT
2	TEST	TRANSMITTER OR RECEIVER IS TEST CLIENT	PERMIT

111

Fig. 11B

LINE No.	VIRTUAL MACHINE	COMMUNICATION IDENTIFYING CONDITION	ACTION
1	OPERATION OR TEST	RECEIVER IS NETWORK DEVICE	PERMIT
2	TEST	ALL	REJECT
3	OPERATION	ALL	PERMIT

112

Fig. 11C

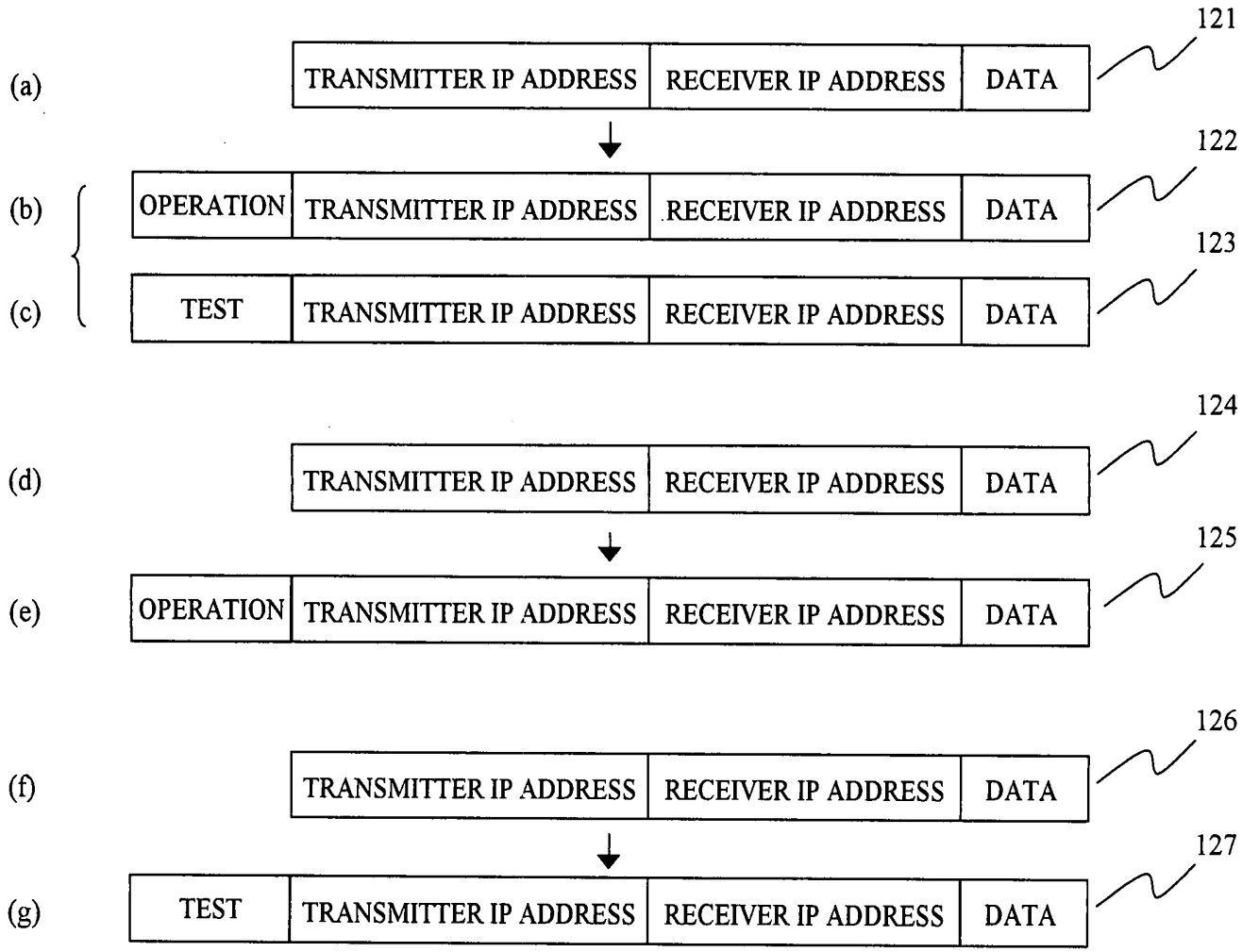
(a)
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
121
(b)
OPERATION
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
122
(c)
TEST
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
123
(d)
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
124
(e)
OPERATION
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
125
(f)
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
126
(g)
TEST
TRANSMITTER IP ADDRESS
RECEIVER IP ADDRESS
DATA
127

Fig. 12

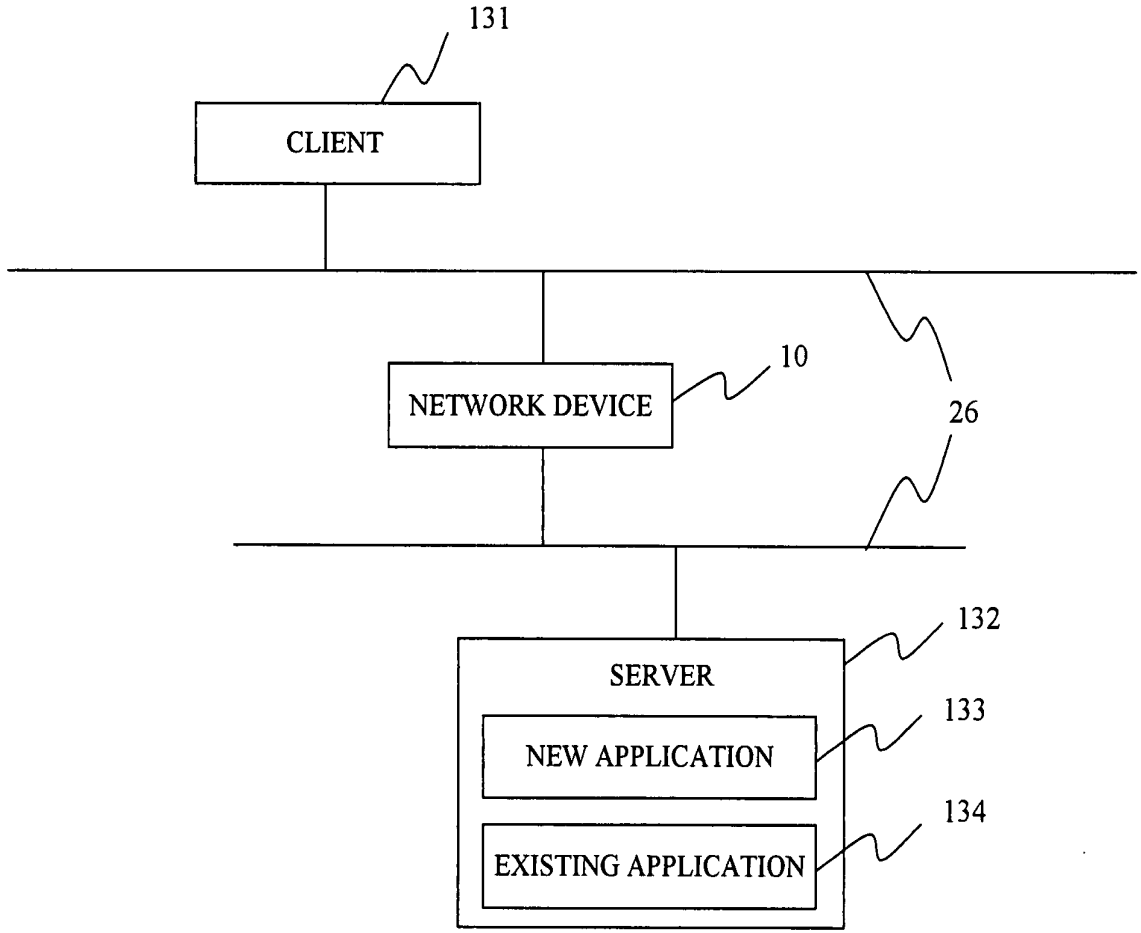
131
CLIENT
10
NETWORK DEVICE
26
132
SERVER
133
NEW APPLICATION
134
EXISTING APPLICATION

Fig. 13

LINE No.	VIRTUAL MACHINE	COMMUNICATION IDENTIFYING CONDITION	ACTION
1	OPERATION	COMMUNICATION RELATES TO NEW APPLICATION	REJECT
2	TEST	COMMUNICATION RELATES TO NEW APPLICATION	PERMIT

140

Fig. 14A

LINE No.	VIRTUAL MACHINE	COMMUNICATION IDENTIFYING CONDITION	ACTION
1	OPERATION	COMMUNICATION RELATES TO NEW APPLICATION	REJECT
2	TEST	COMMUNICATION RELATES TO NEW APPLICATION	PERMIT

141

Fig. 14B

LINE No.	VIRTUAL MACHINE	COMMUNICATION IDENTIFYING CONDITION	ACTION
1	OPERATION OR TEST	RECEIVER IS NETWORK DEVICE	PERMIT
2	TEST	ALL	REJECT
3	OPERATION	ALL	PERMIT

142

Fig. 14C